MINUTES

CALIFORNIA TRAFFIC CONTROL DEVICES COMMITTEE
MEETING OF
July 17, 1997

The second meeting of the CTCDC in 1997 was held in the Council Chambers of the City of Walnut Creek, on July 17, 1997.

Chairman Wayne Tanda opened the meeting at 9:03 a.m. with the introduction of members and guests. The Chairman thanked Mr. Rafat Raie and the City of Walnut Creek for their gracious hospitality on behalf of the Committee.

The following members, alternates, and guests were in attendance:

ATTENDEES	**ORGANIZATION**	**TELEPHONE**
Members (Voting)		
Wayne Tanda Chairman	League of California Cities, City of San Jose	(408) 277-4945
Merry Banks Vice Chairman	California State Automobile Association, San Francisco	(415) 565-2297
Bruce Carter	California State Association of Counties, Shasta County	(916) 225-5661
Capt. Ron Newton	California Highway Patrol, Sacramento	(916) 657-7222
Dick Folkers	League of California Cities, City of Palm Desert	(760) 346-0611
Jerry Meis/ Jack Kletzman	California Department of Transportation, Sacramento	(916) 654-4551
Richard Backus	Auto Club of Southern California	(213) 741-4532
John Wallo	California State Association of Counties, San Luis Obispo County	(805) 781-4466
Jack Kletzman Secretary	California Department of Transportation, Sacramento	(916) 654-4715

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ATTENDEES	ORGANIZATION	TELEPHONE
Jack Champlin	NHTSA Region 9	(415) 744-3089
Paul Chiu	Caltrans, District 4	(510) 286-4802
Augustine Citou	City of San Bruno	(415) 877-8865
Tom Clausen	City of Concord	(510) 671-3137
R. Richard Courier	Petaluma resident	(707) 763-8195
Vern Cowan	Caltrans, District 12	(714) 724-2343
Ray Davis	City of San Leandro	(510) 577-3438
David Dornaus	Contra Costa County	(510) 370-5331
Lucy Dyke	City of West Hollywood	(213) 848-6452
David Evans	Hewlett Packard	(408) 435-6144
Peter Floodman	Light Guard System	(707) 542-4547
Hal Garfield	Consultant	(916) 487-2869
David Grosse	City of Pasadena	(810) 405-4610
Michael Harrison	Light Guard System	(707) 542-4547
Roberta Hughan	California Air Resources Board	(916) 324-7583
Enid Joffe	Edison EV	(213) 452-4627
Steve Kersevan	Contra Costa County	(510) 313-2254
Sabina Kosek	California State Automobile Association, San Francisco	(415) 565-2298
Dwight Ku	California State Automobile Association, Sacramento	(916) 443-2577
C. K. Lau	Caltrans, District 4	(510) 286-4555
Lujana Lopez	CHP	(916) 657-7222
Perry Lowden	Consultant	(916) 673-2214
Mavh Lowery	City of Orinda	(510) 253-4231
Cecile Martin	California Electric Transp Coalition	(916) 552-7077
Aki Morimoto	Caltrans, District 4	(510) 286-4560
Larry Moss	Contra Costa County	(510) 313-0354
Gabriel Obadan	Cogar Company	(818) 796-4581
Virendra Patel	City of Alameda	(510) 748-4514
Andrew Poster	City of Daly City	(415) 991-8231

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ATTENDEES	ORGANIZATION	TELEPHONE
Rafat Raie	City of Walnut Creek	(510) 256-3529
Ahmad Rastegarpour	Caltrans, Sacramento	(916) 654-7143
John Reynolds	Caltrans, District 6	(209) 488-4194
Maria Robinson	City of Orinda	(510) 253-4231
Sephanie Robinson	The Planning Center	(714) 851-9444
Randy Ronning	Caltrans, Sacramento	(916) 654-7312
Sal Rosano	City of Santa Rosa	(707) 543-3558
Richard Ryan	Caltrans, Sacramento	(916) 654-2634
Raul Sanchez	Caltrans, Sacramento	(916) 654-4823
Jim Sanders	Caltrans, Sacramento	(916) 654-2692
Matthew Schmitz	FHWA	(916) 498-5850
Mohammad Siddiqui	Stanislaus County	(209) 525-6552
Stuart Spoto	Hewlett-Packard	(408) 435-6260
Allan Tilton	City of Petaluma	(707) 778-4438
Gerald Tripp	Caltrans, District 6	(209) 488-4174
Ed von Borstel	City of Modesto	(209) 577-5266
Steve Weinberger	W-Trans	(707) 542-9500
Stan Workman	City of Foster City	(415) 286-3285
Mary Jo Yung	City of Santa Rosa	(707) 543-3818

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MOTION: By Bruce Carter, second by John Wallo, to adopt the minutes of the Palm Desert meeting, held on January 30, 1997. Motion carried 8-0.

MEMBERSHIP

Captain Joe Farrow of the CHP has been promoted and his position is now held by Captain Ron Newton. Mr. Jack Kletzman has been replaced as the voting member for Caltrans by Mr. Gerry Meis, but will stay on in the capacity of an alternate representative and Executive Secretary. Mr. Gary Foxen, a long time representative for the Auto Club of Southern California, has been replaced by Mr. Ray Mellen. Mr. Mellen's position as an alternate has been filled by Mr. Richard Backus. Mr. Chris Ramstead is no longer an alternate for California State Association of Counties and this position remains vacant. Mr. Jerry Hahs has been appointed as the Southern California alternate for LOCC.

91-6 EMERGENCY MEDICAL CARE

Bruce Carter said that when individuals request signs on State Highways in Shasta County, Caltrans refers them to Shasta County. Carter resists this, but the EMERGENCY MEDICAL CARE symbol sign policy states that "... signing on State Highways is normally provided by local agencies under encroachment permit." Carter brought this issue to the Committee to see if other local agencies have this referral problem, or if other local agencies want control of highway signs in their jurisdictions. Carter requested a policy change so that local agencies don't have to make these decisions.

John Wallo said there was some inconsistency because Caltrans installed campground symbol signs in his district. He feels these signs are in the same category as the emergency medical care sign. Bruce Carter felt that Caltrans would rather rely on a local agency for sign maintenance than an individual.

Gerry Meis said that Caltrans has made a concerted effort in the last few years to reduce the number of signs it has on the State Highway System. Catrans has around a half million signs in place which is expensive to maintain. In some cases Caltrans puts up the signs, while in other cases the local agencies put up the sign.

91-6 EMERGENCY MEDICAL CARE (continued.)

Gerry Meis said that he would have a hard time justifying State expenditure for individuals wanting a sign. Bruce Carter said he did not want to maintain the sign either. Wayne Tanda expressed uncertainty concerning which signs came under this policy. If there is an agreement that the local agency maintains the signs then that agency takes care of all signs. Tanda felt that if only certain signs required local agency installation and maintenance then that policy lacked consistency. Carter said he was not responsible for sign maintenance on State highways and resisted the request for the EMERGENCY MEDICAL CARE symbol sign.

Dick Folkers pointed out the policy was a "may" condition and a local agency is not required to erect such a sign. Bruce Carter was complaining that Caltrans was deferring the decision to him rather than making the decision themselves. Perry Lowden recalled that the sign was intended to be used when no other facility was available. Caltrans was opposed to the sign, but agreed to establish the standard at the request of local agencies who were willing to install and maintain the sign at their cost. Lowden suggested changing the policy to local so that an individual could be responsible for the sign. Carter agreed. He said he did not want to be caught between the State and an individual. Carter was willing to erect trailblazing signs where necessary, but was reluctant to be responsible for signs on a State facility.

Perry Lowden said that the provision for erection and maintenance at local agency expense was only for a few signs. Jack Kletzman said the file showed that Caltrans expressed the opinion that a 911 call would be adequate to locate emergency facilities. Kletzman said that the sign was approved at the request of local agencies who wanted to identify particular institutions to the motoring public. Local agencies were responsible for the installation and maintenance through the permit process. John Wallo suggested that either the State or the local agency should be responsible and the term "normally" should be eliminated from the policy. Wayne Tanda requested that Caltrans review the situation and bring the issue back to the Committee. Bruce Carter requested comments from other agencies. Tanda requested a list of all signs with such a provision.

ACTION: Item continued.

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93-18 CROSSWALK, SEQUENTIAL LIGHTING

Sal Rosano recalled that in 1993 the City of Santa Rosa had a disastrous series of accidents involving pedestrians in crosswalks and began to look for some way to deal with the problem. The City brought to the Committee a concept for testing. The Committee approved four test sites and the City installed three of them. Rosano felt that the durability and quality of the device has been significantly improved from the original prototype. The City merely wanted to test the effectiveness of an in-roadway lighting system which would alert motorists to the presence of pedestrians. Rosano noted that since that time the experiment has been expanded to include several other cities.

Steve Weinberger presented the Committee with a final report and noted that the funding for the experiments was through the State of California Office of Traffic Safety and the FHWA through the University of North Carolina Highway Safety Research Center. Weinberger worked with the City of Santa Rosa on the initial study and represents the cities of Fort Bragg, Willits, Lafayette, West Hollywood, and Petaluma in their current studies. The City of West Hollywood has not yet installed any devices.

Steve Weinberger said the concept is in-roadway lights spread across the pavement. The lights face out from either side of the crosswalk toward oncoming traffic and are not visible to the pedestrian. One drawback is that lights in the pavement experience exposure to traffic, but the benefit is that the lights are in the direct line of sight of the driver. The driver sees the lights and the pedestrian at the same time. Weinberger described the first three prototype devices as being similar to a standard type H raised pavement marker which is 4" x 4" x $^{3}/_{4}$". The device is 8 $^{3}/_{4}$" x 6" x 1$^{3}/_{8}$". The lighting source are LEDs with a 3" x 1" optical lens. The main difference in the first three prototypes is the way the device is made and the increase in light intensity. The devices are currently laid out with one on the centerline of the street, one in the center of each travel lane, and one the outer edge of the outside lane. The devices are normally installed within 1' of the crosswalk.

93-18 CROSSWALK, SEQUENTIAL LIGHTING (continued.)

Steve Weinberger told the Committee that the devices in Santa Rosa all had push button activation. There was a sign PUSH BUTTON FOR X-WALK WARNING DEVICE. Subsequent sites used an automated activation system to encourage the pedestrian to pick a gap in traffic. The automated activation system is an ultra sonic detector and has not performed up to expectations. The City of Petaluma supplemented the ultra sonic system with video detection. Weinberger feels the video system is better. Some of the new test sites have reverted to push button activation. Some sites have been retrofitted since the test with later versions of the device. He recommends that, although automatic detection may be the preferred method in the future, a push button method of activation should be used now for reliability.

New models are now black and more rounded, measuring $6\frac{3}{4}$" in diameter and $1\frac{1}{4}$" high and resemble a Type A marker. There is no change in prism area or in the light intensity from current test units. The Santa Rosa site is at a school crossing and uses a yellow device instead of black.

Steve Weinberger noting that the Committee had asked for accident rates to measure the effectiveness of the device, discussed this issue with experts on the East Coast who work for the FHWA. They agreed that five to ten years of accident data were needed to evaluate the effectiveness of a device at a single location, because sites have as few as one accident a year. Weinberger cited that one of the sites in Santa Rosa had one fatality in ten years and since the installation has not had an accident in two and one-half years. But this is not statistically significant.

Steve Weinberger said he had discussed the analysis methodology with testing safety experts from around the country who are involved in the FHWA testing program. They have reviewed the previous report, made suggestions, and provided information on other studies now in progress. This group suggested the best way to determine the effectiveness of the device is through driver behavior of conflict samples. That is to observe the behavior of drivers approaching the device and evaluate the conflicts that occur before and after installation. Steve Weinberger said there were studies that show there is a good correlation between this sampling and resulting accident rates ten years later.

93-18 CROSSWALK, SEQUENTIAL LIGHTING (continued.)

Steve Weinberger said their primary performance measures were based on "before" and "after" studies conducted 6 to 8 weeks following the installation of the devices at the new locations. These studies were conducted using a "staged pedestrian" in order to control conditions. Data was not collected when the general public was using the crosswalk. The same pedestrian was used to do the same maneuvers of stepping and looking. Looking from the sidewalk and stepping out into the crosswalk. At no time did the "staged pedestrian" step in the path of the vehicle and the first vehicle in the platoon was surveyed.

Steve Weinberger said driver reaction data consisted of collecting the breaking distance (The distance in advance of the crosswalk that the tail lights are seen as lit.), the vehicle approach speeds 300 to 500 feet in advance of the crosswalks, and the deceleration. (As measured by the travel time between 500 and 100 feet from the crosswalks.)

On separate days from the driver reaction surveys Steve Weinberger said they conducted driver interviews. Drivers were asked if they had seen the crosswalk or the pedestrian. Petaluma had a fairly constant flow of pedestrians. Pedestrians were surveyed to see if they were aware of the crosswalk lights and how comfortable they were crossing the street. The speed at which pedestrians walked was also measured.

Steve Weinberger showed slides of the six test sites and graphs of the data collected. The first slide was of Fort Bragg on State Route 1. The number of drivers that yielded to pedestrians increased from 45% to 75-90% during the day and 15-20% to 90% at night. In Lafayette, across from a hotel, 5-10% to 15-30% during the day and 0% to 50-60% at night. Also in Lafayette, at Pleasant Hill Road, 0-5% to 30-35% during the day and increased more dramatically at night. In downtown Petaluma, 55-70% to 85-95% during the day and 55-60% to 80-85% at night. In Wilits on State Route 101,
20-30% to 60% during the day and 5% to 60% at night. In Santa Rosa, which represents the only long term testing, on Summerfield Road (One direction only.), 25%, 60% two months after installation, and receded to 48% two years later, during the day. There were no initial night surveys. Data was taken with the pavement lights on and off to simulate initial night surveys.

93-18 CROSSWALK, SEQUENTIAL LIGHTING (continued.)

Steve Weinberger said driver interviews indicated, for all the test sites, an average 85% saw the crosswalks before the light installation and 93% after. An average of 71% of the drivers saw the pedestrian waiting to cross before the light installation and 84% after. Weinberger then showed a video of the Petaluma test site in use. Weinberger concluded that the driver behavior surveys and interviews indicates that pavement lights increases motorist awareness of crosswalks and pedestrians by an average of 25% to 30%. The actual amount of improvement depends on the specific site. Site conditions contribute significantly to degree of safety.

Steve Weinberger told the Committee that drivers seem to understand that the yellow pavement lights mean caution and appear to react appropriately. Pedestrians at the automatic detection sites behave as they would at any normal crosswalk. Pedestrians at push button activation sites tend to look for some acknowledgment before proceeding. There are only three or four companies that build systems using ultra sonic, infra-red, or video technology to detect pedestrians. Weinberger doesn't believe the technology is sufficiently perfected to consistently protect pedestrians. Each new prototype of pavement light has improved durability.

Steve Weinberger said that studies show continuously flashing overhead beacons are not effective in urban settings because they tend to blend into the background. They are somewhat effective in rural locations. The only way to compare the proposed device with flashing overhead beacons is to test each system at the same location but no city wanted to volunteer. The cost of installation of the proposed device averaged $20,000. This would be about the same cost for an overhead flashing beacon, with a fairly large mast arm, and a pedestrian actuated system.

The MUTCD's lists the following five basic requirements for an effective traffic control device: Fulfill a need, command attention, convey a clear simple meaning, command respect from the road users, and give adequate time for proper response.

93-18 CROSSWALK, SEQUENTIAL LIGHTING (continued.)

Steve Weinberger cites the need is demonstrated by the number of communities showing interest in this device. The data indicates the device increases the drivers awareness of the crosswalk and therefore commands attention. A flashing yellow light is a simple concept which means caution. The system commands respect of the road users because the flashers are only actuated when pedestrians are in the crosswalk. If the street is clear and straight the lights can be seen for over 1000 feet. Most sites have 300 to 400 feet. As long as there is adequate visibility to the crosswalks, the device provides adequate time for driver response.

Steve Weinberger proposed guidelines suggested on the basis of existing test sites. These guidelines are uncontrolled crosswalks, an average speed of 45 mph or less, traffic volumes of no more than 30, 000 vehicles per day, adequate visibility to respond to the device, no other devices within 250 feet, and a minimum of 100 pedestrians crossing per day.

Sal Rosano said at the three installations in Santa Rosa there have been no accidents. There have been accidents at the forth site which has no installation. He said that in the last five years there were 25,000 pedestrians killed and 450,000 injured in the nation. Rosano feels the device is worth considering even if there is a small chance that it improves this situation. He asked that the Committee approve the concept and that Caltrans develop the specifications.

Allan Tilton told the Committee that the community response in Petaluma, to the proposed device, had been positive. Although he is a proponent of eliminating crosswalks where possible, Tilton favors this device, in the downtown area, as a means of increasing the motorist’s awareness of pedestrians. He feels this device is especially useful where the pedestrian is obscured by traffic in adjacent lanes.

Kwan Lau said he reviewed the site in Lafayette and was concerned about LED degradation, the high cost and difficulty of maintenance, and pedestrians crossing the intersection thinking the system had been activated when it had not. Lau suggested that improved lighting at the crosswalk may just as easily resolve problems of driver awareness.

93-18 CROSSWALK, SEQUENTIAL LIGHTING (continued.)

Paul Shields observed the site in Lafayette and felt the system is ineffectual because cars failed to stop for him when he used the crosswalk. Shields recommended a full pedestrian operated signal which also activates a yellow caution light for automobiles.

Dave Evans explained that the LEDs in this system flash and are only on for a couple hundred mili-seconds per flash. In order for these LEDs to degrade significantly the devices would have to be used for decades. Unlike LED traffic signals, degradation in LED pedestrian crossing lights is not an issue. This assumes 50% degradation is a limiting factor.

Jack Champlin says that National Highway Traffic Safety Administration recommends adoption of the concept. He feels the concerns can be addressed by Caltrans. Champlin also said that County Health Services sees traffic related accidents as a public health epidemic with 40,000 people dying and one million injured each year. It becomes a managed care issue, a health cost issue, and a health status issue. Health systems planning is placing a lot of emphasis on transportation related injury, and as a result has made strong partnerships with the traditional traffic safety community. Champlin feels the proposed device is a promising intervention for pedestrian related injuries which are otherwise very limited. Champlin told the Committee he was instrumental in bringing the device to the City of Lafayette and in selecting the two sites. Although acknowledging that Mt. Diablo Blvd. is a difficult site, he feels there has been a substantial improvement in pedestrian safety.

John Wallo expressed concern about the reliability of data, given the short length of time at the new locations, the lack of PED XINGS pavement markings, the small size of pedestrian crossing warning signs, the device is too tall, the false sense of security, and the reliability of the device. Wallo does think the device will be effective in foggy weather. He feels there is a general trend of replacing law enforcement with devices.

Gerry Meis said the most important statistic is the accident data. While interviews may be helpful they are no substitute for good hard empirical data. Public agencies are sometimes forced by media pressure to act without resolving the problem.

93-18 CROSSWALK, SEQUENTIAL LIGHTING (continued.)

In response to Committee questions, Steve Weinberger said that there were 50 to 200 motorists responding to the survey, per direction, at a given site, over a one day period. The survey was conducted at about the same time of day, and in ideal weather conditions. Usually in mid-week during off-peak hours. Although results may vary due to time and weather, this procedure was used to get comparable results in "before" and "after" conditions. Weinberger said the spacing of the lights was developed by the City of Santa Rosa staff for Santa Rosa and subsequently duplicated at other sites. The pattern consisted of a light at the centerline, the center of each lane, and at the edge of the travel way. They are not spaced equally. The lane line divider does not have a light. Weinberger thought it important to keep the light in the center of the lane, rather than on the lane line, so that where a vehicle is blocking the driver's view, the last thing the first passing car in the platoon sees before the crosswalk is the light in the center of the lane. Weinberger has not conducted any studies considering the stability of motorcycles or bicycles with respect to the devices, nor have there been any complaints.

Carole Debriton recalled it was closer to 300 cars that were surveyed in each direction. The duration of test was spread out to include morning, afternoon, and evening. Data was taken at a similar time for replicating "before" and "after" conditions at each site.

Dick Folkers observed that the Committee has been looking at this project since 1993 and there have been many improvements since it's inception. He noted there are concerns with respect to maintenance, the height of the device, and the punch the lights would have in inclement weather. Nevertheless, he views this device as a tool which should be made available to local agencies and recommends its approval.

In response to further Committee questions, Steve Weinberger said that he used the device which the manufacturer provided which was the same shape as the one in the report. There was no consideration of law enforcement effort with respect to violations of pedestrian right of way in the study.

Gerry Meis expressed concern that not enough time had been spent to collect data which would prove the device reduces accidents. He questioned the validity of approving a device, when no one can say safety in the crosswalk has been improved.

93-18 CROSSWALK, SEQUENTIAL LIGHTING (continued.)

Steve Weinberger repeated his statement that five to ten years of accident data are needed to determine improved safety conditions. The only way to determine improved conditions in a shorter period of time is to look at driver behavior and monitor conflicts “before” and “after” system installation. Gerry Meis established that there were other cities, willing to use the device, that had not received permission to test from the Committee. Dick Folkers said that there had been a stifling of requests for experimentation because the Committee had limited the testing to six specific cities. Sal Rosano suggested that the way to test the devices was to let all the cities who wish to install the device, do so, and then collect the data. Rosano feels there is enough information for Caltrans to address the lumens, size, height and location of these devices.

Richard Backus pointed out that the City of West Hollywood had been granted permission but had not initiated an experiment. Backus felt that City was significant because of its unique urban setting. Lucy Dyke expressed her City’s interest in the device. They have a location where a signal is not appropriate, with relatively high pedestrian accident rate at night. They share the concerns of Committee members with respect to the height of the device, the lack of a rounded shape, and the reliability of the detection system. Dyke said the City wanted to proceed with the test. Bruce Carter suggested that this might be a good location for accident data. Dyke suggested that all these locations were unique and someone needs to make a judgment as to whether the device would be an appropriate traffic control device.

Steve Wienberger said the City of West Hollywood is one of the sites approved by the Committee and is funded by OTS. “Before” condition data has already been collected at that site. He anticipates installation as soon as the details have been resolved.

Ron Newton expressed concern about the height and shape of the device and its possible effect on bicycles and motorcycles. Sal Rosano responded that in Santa Rosa, with the older more obtrusive model of lighting device, there have been no accidents involving bicycles or motorcycles in the past three or four years. Bicycles frequent two of the three sites on a daily basis. Rosano feels that as more cities employ this device designers will evolve a device which is more streamline in shape and lower in height.

93-18 CROSSWALK, SEQUENTIAL LIGHTING (continued.)

Sal Rosano told the Committee if the devices work, cities will buy and use them because they serve a need. He didn't think accident data was collectable until enough installations were made to collect that data, and there won't be enough installations unless the Committee recommends approval. Rosano thought we were at the point where the Committee moves to the next step where Caltrans establishes the specifications or gives him some new direction.

Jack Kletzman pointed out that the request for accident data wasn't new and had been there since the inception of the experiment. In response to questions from Kletzman, Steve Wienberger said that the research professionals that he had conferred with, said that to determine the effectiveness of the device on pedestrian accident rates at one site, would take five to ten years, and that additional test sites would not reduce the time period. Wienberger also said that the devices at new locations had been installed from seven weeks to three months before the collection of data, but he could not distinguish between reaction to the device or reaction to the novelty of the device. John Wallo established that their were no "before" installation accident data records collected at the various sites.

Merry Banks felt the Committee had asked a lot of this group, that the information in their final report is very compelling, and that the technology will improve with time. Banks feels we need to do something to help the motorist and the pedestrian to increase conspicuity.

John Wallo expressed concerns that if the Committee recommended approval local agencies might propagate installation of the device prior to approval by Caltrans. Wayne Tanda shared that concern and recommended timely action. He cited speed bumps and LEDs as catchy ideas which agencies will do on their own in the absence of guidelines. The establishment of standards or guidelines at a higher level will help them do the best thing rather than the most convenient thing.

93-18 CROSSWALK, SEQUENTIAL LIGHTING (continued.)

Wayne Tanda felt that the driver behavior data approach is acceptable. Tanda expressed the opinion that the device works. It warns motorists, at least to the extent of some of the other existing traffic control warning devices. Tanda was concerned about the height of the device and the possible impact on bicyclists and motorcyclists. While 3/4" is acceptable, 1 3/8" is a judgment area and Tanda expressed a desire for some input from the Bicycle Advisory Committee.

Mike Harrison said the design of the device has been an evolution from a crude initial concept to more durable device, easier to install and maintain, for the purposes of testing and evaluation. The current model which is being installed at the test sites is 1 3/8". Harrison acknowledged the units do appear to be overly high. The purpose of the design was to determine if motorists would react positively to the device and not to consider the degree to which it might be a problem for bicyclists or motorcyclists. This design was kept as low as possible for the technology available at the time. In the four years subsequent to the initial design, there have been improvements in LED design, durability and size reduction. The latest prototype is now 1 1/8" above the road surface and it can be lower. Harrison told the Committee that he is currently working on a 3/4" high unit. He feel confident that design problems such as brilliance, housing durability, and a 3/4" height will be addressed.

David Dornaus told the Committee that experienced motor cyclists do not travel in the center of the lane because of the slipperiness caused by gasoline and oil drippings. They generally travel in tire tracks. Since the devices are normally placed in the center of the lane Dornaus feels there will be minimum contact. As a test he intentionally drove his motorcycle over a device in Lafayette and the effect was the same as crossing an expansion joint. There was no vibration or loss of control. He repeated the test in rainy weather and felt no increase in danger from slipperiness.

Larry Moss said it was his opinion that there is potential liability for devices exceeding 3/4". He told the Committee that high speed bicyclists on thin tires avoid everything. He said the device posed no problem for the experienced rider. He would be more concerned about the recreation cyclist, but because they generally use fat tires, he does not envision a problem.

93-18 CROSSWALK, SEQUENTIAL LIGHTING (continued.)

David Evans said that the latest prototype is $1\frac{1}{8}$" above the road surface and that is less of a hazard than many of the pot holes on California roadways. Evans requested the Committee to refrain from requiring a maximum $\frac{3}{4}$" height above pavement. He suggested making the height as low as possible. Wayne Tanda responded that agencies are responsible for potholes if they are not fixed in a timely manner. Ron Newton said that potholes were a result of nature where these devices would be intentionally installed.

Hal Garfield said that Caltrans had been using illuminated pavement markers for more than twenty years. *[Caltrans has no standard for illuminated pavement markers.]* They were first used on the Coronodo Bridge with green and red lenses for reversible lanes. *[Caltrans removed the illuminated pavement markers in 1993.]* They were also used in Escondido *[Caltrans has no illuminated pavement markers in Escondido.]* on centerline, and on Skyline Boulevard south of San Mateo on edge lines. He said the City of Pheonix uses a white illuminated pavement marker. It appears to Garfield that the intent is to use the yellow flashing light in lieu of a flashing beacon. The MUTCD and the Caltrans Traffic Manual says the flashing beacon is to be used to supplement another traffic control devices, normally a sign. Garfield observed that there were no signs being supplemented. He also was concerned that the MUTCD and the Caltrans Traffic Manual require a flash rate *[Traffic Manual has no flash rate for beacons.]* and the proposed device does not meet that requirement.

Wayne Tanda agreed with Garfield that a W54 might serve to inform motorists of the meaning of the flashing lights. He suggested that warrants provided by the experimenters be considered by Caltrans.

Wayne Tanda proposed that the motion for approval be revised so that the height of the device be based on the safety of bicycles and motorcycles. Tanda said that $\frac{3}{4}$" would be acceptable, but it could be higher. Merry Banks was reluctant to accept a revision which would weigh the proposal down with another problem. Tanda explained he will have hundreds of thousands of motorists crossing these devices and somebody will hit it. As the responsible party for the local agency, he needs some assurance that the allowable height is appropriate. Banks accepted the revision.

93-18 CROSSWALK, SEQUENTIAL LIGHTING (continued.)

Wayne Tanda pointed out that if the Committee defers for four months to get the information from West Hollywood, there will still be nothing to address accident concerns. Accident data requires a much greater time frame. If the Committee waits for the five years to gather that data, Tanda sees a proliferation of these devices in all different shapes and sizes which he views as a disservice. He feels the cost of the device that is a decision for the local jurisdiction. The market will determine how wide spread these devices become utilized.

Wayne Tanda said that there are other devices such as flashing beacons or signals which could be used but the Committee's task is to recommend to Caltrans what could be a traffic control device and let the practitioners select whatever device is applicable.

Bruce Carter warned that the proposed warrant for no other traffic control device 250 feet in advance of the crosswalk would remove all striping and needs to be revised. John Wallo established that local agencies will have to wait until Caltrans complete its studies and develops the standards before the device can be used.

MOTION: By Dick Folkers, second by Merry Banks, to recommend that Caltrans develop specifications and standards for a pedestrian flashing light system, including a height based on the safety of bicycles and motorcycles. Motion passed 6-2.

ACTION: Item completed.

95-7 SELF ILLUMINATING SIGNS

Dick Folkers explained that the Cogar Company demonstrated the sign to the Committee in May 1995. The City of Pasadena has allowed installation of the sign in early 1995 and has been satisfied with the performance, visibility, maintenance, and economics of the sign. The City is requesting the Committee to recommend approval of the technology.

95-7 SELF ILLUMINATING SIGNS (continued.)

David Grosse said that the Cogar Company has developed a new technology which takes existing light and reflects it through the face of the sign to make it appear as though the sign was an internally illuminated sign. One of the biggest advantages of this technology is for elevated signs, particularly street name signs, which are not illuminated by car headlights and are otherwise hard to see at night. The sign uses light from an existing overhead luminaire to reflect through the face of the sign and make it appear as though the street name sign were internally illuminated.

David Grosse said the sign has withstood the wind and rain in two and a half years of demonstration time to the City's satisfaction. Grosse said the signs still look nice and functions very well. Its maintenance and power costs have been effectively zero. Because the sign has an opaque face of its own, in the event of a power failure, the sign would appear as a flat faced sign.

Gabriel Obadan said that most traffic signs are effective during daylight hour because of the sun but are much less effective at night. Obadan said the advantages of his technology was that the sign was brighter, cost effective, and there is nothing within the sign that is dangerous. He said that triangular prisms within the box shaped sign, intensify and redirect the light in two directions through the faces of the sign. There is no electrical equipment such as wires or batteries. He requested that the Committee recommend approval for the technology for signs.

John Wallo said the MUTCD requires that street name signs shall be reflectorized or illuminated. The legend and background shall be contrasting colors and shall have a white message and border on a green background. Wallo recognized that a lot of agencies are not in conformance, but he was concerned that in the advent of a power failure, the sign would be neither reflectorized of illuminated. He suggested that the sign at least have a reflectorized background.

Bruce Carter commented that the Federal Government is moving in the direction of larger letters for street name signs and reflectivity requirements for all signs. Gabriel Obadan said that these requirements could be met.

95-7 SELF ILLUMINATING SIGNS (continued.)

Wayne Tanda observed that when, due to power failure, existing internally illuminated signs go off they are blank and thus there is no difference. John Wallo agreed saying that his agency is going away from internally illuminated signs to diamond grade which he feels is cheaper and just as functional. Tanda said his agency is using reflective sheeting on overhead street signs at signalized intersection with excellent results.

Jack Kletzman, in answer to members questions, explained that Cogar Company had come before the Committee as an informational item and had never been approved for experimentation and that Caltrans Laboratory had looked at the device and found Caltrans had no need for the product. In the course of their assessment the Laboratory was concerned that the mastarm and support mechanism were not sufficient to withstand an 70 mph wind load. They were concerned about the effects of dirt and bird droppings on the top surface as well as surface scratches on the light output. They had reservations whether the device would receive sufficient illumination to meet minimum requirements of light output or how the signs would fare in the event of power failure. Unless the unit is watertight, water and dirt could accumulate on the internal mirror surface to reduce the effectiveness of the device.

Wayne Tanda noted that there was nothing in writing to document the City of Pasadena's test. Had this been an approved experiment, hard data documenting visibility distance, illumination, and the ability to meet State Standards would be a requirement.

David Grosse said he was testing the technology rather than the mounting hardware. Nevertheless, the installed sign is mounted on an overhead mastarm and withstood an 100 mph wind which occurred six months ago. Many illuminated signs in this wind had their sides blown out but that did not happen with the test sign. Although no data was presented about the illumination, Grosse assured the Committee that light emanating from the sign was more than sufficient in terms of distance.

Bruce Carter felt that if the background of the sign were made retroreflective it would meet the requirements of the MUTCD, and if that is the case, the Committee doesn't have to take any action.

95-7 SELF ILLUMINATING SIGNS (continued.)

Wayne Tanda responded that it may not be necessary to meet the reflectivity requirements of the MUTCD. Reflectivity refers to the letters of the sign. An internally illuminated sign, when the power is off, doesn't meet the MUTCD reflectivity requirements. But that is true for all existing internally illuminated signs. Bruce Carter agreed saying that if the sign is considered internally illuminated no Committee action is needed. The MUTCD says retroreflective or internally illuminated. Tanda agreed, saying that if the sign meets the standards for a traffic control device it is not necessary for the Committee to take action.

Wayne Tanda said that if it looks like a street name sign, meets the general requirements of a street name sign, although it may have a different method of illumination, just makes it a traffic control device. Jack Kletzman said his remarks pertained to Caltrans use of products as reported by the Laboratory.

Wayne Tanda suggested that, if the Committee decided that this device met the requirements of street name sign provisions, and if a local jurisdictions wish to use the device, then local jurisdictions would turn to Caltrans for product acceptance. Tanda concluded that Caltrans would decline to test this particular sign, and it would be up to each jurisdiction to test it. Jack Kletzman responded that local jurisdictions are not required to use the same products as Caltrans. Once a traffic control device was approved by Caltrans, any local jurisdictions may use whatever product they choose, as long as it conforms to the standard or specification.

Wayne Tanda felt that if a jurisdiction wished to use the device, it would be incumbent on them to insure that all features of the sign, such as lettering size, met State Standards.

MOTION: By Dick Folkers, second by Bruce Carter, that the Cogar device is equivalent to an internally illuminated sign and may be used on roads in California.
Motion carried 7-0 with 1 abstention.

ACTION: Item completed.

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97-2 TODS SIGNING

Jack Kletzman explained that the proposed Tourist Oriented Directional Signs (TODS) are in addition to existing symbol signs. There had been some revision to the proposal since the agenda had been published. The art gallery, gift shop, and camper/trailer park symbol signs remain for consideration. The cabin and craft center symbol signs have been withdrawn at this time. The signs were requested by the Office of Tourism and Caltrans' Office of Permits. Revised drawings for the signs were given to Committee members. The gift shop sign box symbol was revised to look more like a present and less like a box and the tent in the camper/trailer park symbol sign was revised to look more like a tent and less like a teepee.

Bruce Carter expressed dismay at all the signs that are going to be erected for all the various industries. Jack Kletzman responded that it wasn't an option in that the Legislature enacted AB2339 and SB768. Wayne Tanda wanted to discuss the signs on an individual basis. John Wallo wanted the details explained in a sign policy. Kletzman said the policy was in the law which had been distributed to the Committee and the signs were paid for by the people who want them.

Jim Sanders told the Committee that citizens familiar with the economics of California appealed to the Legislature to get some type of inexpensive advertising. Although straight advertising is prohibited these generic signs are available. The signs can be plural or singular. Ideally the signs should direct motorists to a group of businesses. Only a limited number of signs are allowed at each intersection and the intersection must provide direct access. The signs are on State Highways but may require trail blazers. John Wallo reiterated his request for a policy.

Wayne Tanda recalled that the Committee had some of this discussion at the January meeting. John Wallo said the program worked very well in his town. They have a vintners association that funded the entire installation. The association hired a professional sign contractor to manufacture, install, and maintain the sign. Bruce Carter supported the request for a policy. Jim Sanders said the signs had to be on a conventional highway, in an area with a population of less than 50,000, the business can not be visible from the State route. Jack Kletzman reiterated his statement that the legislation was given to the Committee at the last meeting.

97-2 TODS SIGNING (continued.)

Bruce Carter established that the Committee was only approving the symbol sign. Jim Sanders said that small businesses requested these signs. Jack Kletzman said that all signs would be white reflective on blue background and are consistent the sign is consistent with the MUTDC and the Caltrans Traffic Manual. Sanders said the initial design came from Dreyfus which is a recognized international manual for sign design.

Jim Sanders explained that when a small business wants a sign, and there is not an established symbol, then the small business submits a request. The request comes through the Caltrans District Office to the State Department of Commerce's Office of Tourism. The Office of Tourism has approved these three symbol signs. Gerry Meis suggested that Caltrans comes back to the next meeting and brief the Committee on what the law says. Wayne Tanda said that the Committee had gone over this at the January meeting when it had approved most of the initial symbol signs.

John Wallo and Bruce Carter wanted a sign specification sheet. Wayne Tanda suggested Caltrans come back with sign specification sheets. Dick Folkers expressed concern about the time delay involved with that suggestion.

MOTION: By Dick Folkers, second by John Wallo, to approve in concept the use of the symbol signs. Motion failed 2-4.

MOTION: By Bruce Carter, second by John Wallo, have Caltrans present specification sheets with policies at the next meeting . Motion passed 7-1.

[The Committee had been given copies of the Legislation at the previous meeting. The sign specification sheet the Committee sought was included in the first sheet of the previously approved TODS sign package. There were no objections to the specific symbol signs. In view of these factors, and the need of the Office of Tourism for prompt action, Caltrans has approved these three symbol signs.]

ACTION: Item completed.

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97-3 GUIDELINES FOR EXPERIMENTATION

John Wallo suggested adding the definition of California Traffic Control Devices Committee hereby referred to as Committee. Wallo also wanted to know in "government agency sponsored *[Section III A]* whether "government agency" refers to the director of public works, or the city council or board of supervisors. Wayne Tanda responded that, in most cases for cities, the director of public works would be delegated the authority to act on behalf of the city.

MOTION: By Mary Banks, second by Bruce Carter, to accept the Guidelines for Experimentation subject to the additional comments. Motion passed 8-0.

ACTION: Item completed.

97-4 SPONSORS RESPONSIBILITIES

John Wallo disagreed with not agendizing an item brought before the Committee to discuss whether it is a traffic control device. *[Section I B]*. Wayne Tanda thought it would be used for those items which were too late for the agenda, so that a member could seek the Committee's opinion whether it should be on the agenda. Jack Kletzman said it was solely for the determination of whether a device was considered a traffic control device. Dick Folkers suggested adding "such issues need not be agendized for discussion."

Jack Kletzman suggested that Status of Experiment Form be used as a means of communication between the sponsor and the experimenter to reduce the flow of paperwork. Although this is the next item for discussion, the use of the form should be included in the Sponsors Responsibilities. Kletzman feels the form is a good idea but the injection of the Executive Secretary between the sponsor and the experimenter is cumbersome. The file has the initial report, all the discussions from any meeting, any interim report, and the final report. The Status of Experiment Form is just a tool to keep the sponsor informed of the status of the experiment. There is no need to put it in the file. If there is a problem or if the item needs to be agendized, the sponsor can call the Executive Secretary.

97-4 SPONSORS RESPONSIBILITIES (continued.)

Bruce Carter thought their was confusion between two reports. The Status Report (referred to in Section IV A of the Sponsors Responsibilities) which is given to the Committee, and the Status of Experiment Form (Item 97-5) which is just between the sponsor and the experimenter. Carter did not think that in the Sponsors Responsibilities there was any discussion of the Status of Experiment Form. Kletzman responded that the Sponsors Responsibilities should discuss the Status of Experiment Form. Carter said that, if that were so, there needs to be an additional section.

Wayne Tanda said they were the same report, because the written status report referred to in Section IV A was the Status of Experiment Form. Bruce Carter said that the Committee requires experimenters to file status reports and if we are talking about the Status of Experiment Form then it should be so stated. Tanda pointed out that currently, experiment status reports are not being submitted and the Committee agreed to establish a form for this purpose. Tanda explained that the Executive Secretary preferred the communication between the experimenter and the sponsor be direct. Initially the process was established to send the forms to the Executive Secretary for distribution to the Committee. The Executive Secretary had pointed out that, the process initiated unnecessary paperwork. Dick Folkers suggested that the procedure recommended by the Executive Secretary be tried.

Wayne Tanda suggested that, to revise the procedure, the instructions should be revised to read, "... it is the sponsor's responsibility to remind the applicant to provide a written status report to the sponsor..." Kletzman reminded the Committee that everyone will be aware of the status because they will appear in the minutes.
Merry Banks suggested, ".. it is the sponsor's responsibility to obtain a written status report .."

MOTION: By Mary Banks, second by Dick Folkers, to accept the Sponsor's Responsibilities with the additional comments. Motion passed 8-0.

ACTION: Item completed.

97-5 STATUS OF EXPERIMENT FORMS

Jack Kletzman said he put this item on the agenda for any suggestions and for Committee approval. John Wallo suggested including the applicants name. Merry Banks wanted to include the address and phone number. Kletzman said the applicant fills it out and signs the document. Wallo suggested changing "signature" to "applicant's signature." Dick Folkers suggested the name, address, phone number. and FAX number. Wayne Tanda pointed out that the phone number was already on the form. Bruce Carter wanted the date of approval for experimentation. Tanda responded that it was covered under milestones.

MOTION: By Bruce Carter, second by Dick Folkers, to accept the Status of Experiment Form with the additional comments. Motion passed 8-0.

ACTION: Item completed.

97-6 PARKING SIGNS (TM Chapter 8-02}

Bruce Carter said he has a problem, in his jurisdiction, with installing parking restriction signs on a State Highway. Carter wants to find out if other local agencies consider it a problem or if they want to keep control. He was hoping, by putting this item in the agenda, to get some input from other local agencies involved in signing parking restrictions on State Highways. Carter prefers the State to tell local constituents that they cannot have a parking restriction sign.

Wayne Tanda said in San Jose they have the authority and prefer to keep it because of the proximity of Caltrans Oakland Headquarters to San Jose and the lack of involvement with San Jose business. Bruce Carter told the Committee that Caltrans can put in signing under certain circumstances such as a risk to those using the highway, but Caltrans takes a hands off approach to limited term parking. John Wallo said they have a similar problem on rural roads. Wallo said that Caltrans sometimes takes the initiative and restrict parking and other times refers the individuals to local government who install the signs under permit. He feels there are two sets of policies.

97-6 PARKING SIGNS (TM Chapter 8-02) (continued.)

Bruce Carter invited other local agencies to send him some information or call him on the phone concerning this issue. Wayne Tanda reiterated his preference to retain control of such parking restrictions, rather than allowing some other agency to make those decisions, even if it is more work. Tanda said that San Jose has an ordinance which delegates the authority administratively to traffic, so that it is not necessary to return to their City Council.

ACTION: Item continued.

97-7 PEDESTRIAN HAND LED SYMBOL

Jack Kletzman recalled that Caltrans had approved a specification for 12" and 8" red LED signals and are now expanding that to include LED pedestrian raised hand symbols. Ahmad Rastegarpour presented the draft specification to the Committee. The specification had modeled after the previously approved specification with regard to physical, mechanical, photometric, electrical quality assurance, design qualification testing, and warrantee.

Ahmad Rastegarpour said that draft copies of the specification have been distributed to vendors and interested agencies for review and comment. The finalized version of the specification will be available through the internet on the Caltrans Homepage. Rastegarpour said that the test samples received from manufacturers meet the standards including the color requirements and intensity.

MOTION: By Jack Kletzman, second by Dick Folkers, to accept the Pedestrian Hand LED Symbol specification. Motion passed 8-0.

ACTION: Item completed.

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97-8 ELECTRIC VEHICLE CHARGING STATION SIGNS

Roberta Hughan said that California has some of the worst air quality in the country, especially in the Los Angeles basin. Approximately 65% of the air pollution, in any area of California, comes from the use of conventionally fueled vehicles. In order to get cars on the road that don't add to the pollution, the California Air Resources Board (ARB) adopted a zero emission vehicle (ZEV) mandate which requires 10% of new passenger car and light duty truck fleets as ZEVs by the year 2003. As a result of this mandate, she expects about 1500 electric vehicles on the road in California in 1998. This figure will increase to 5000 in the year 2000, 150,000 in the year 2003 when the mandate comes into effect, and 1.3 million in the year 2010.

Roberta Hughan said that EV signs are needed because it is very difficult to find charging stations which are small and usually unobtrusively located in parking lots. They consist of two parking stalls, one small signage station, a sign, and a wheel block. An EV gets from 65 to 125 miles on a single charge. The charge can take 30 to 50 minutes. A motorist may not be near home when they need a charge. EVs running out of fuel must be towed to the nearest charging station they cannot just be brought some gas.

Roberta Hughan told the Committee there are maps and brochures showing the locations of charging stations, but it is difficult to continually revises these publications for new stations. EV charging station signs represent assurance in the ability to recharge when needed. Without that assurance, drivers will be frustrated if they can not drive where they want or may be reluctant to buy an EV.

The numbers of recharging stations are growing in Southern California. There are 75 now and there will be 200 more by the end of the year. FHWA has adopted a word message sign and are developing a symbol sign. Roberta Hughan requested that the Committee recommend approval of the electric vehicle charging station signs so that signage would be consistent in California. The MSRC, which is a grant committee, is spending $13 million in 4 years on the EV program. Most of the money goes toward purchasing EVs, but $3.8 million is reserved for charging stations, and $0.5 million for signs. Local jurisdictions are putting up additional stations. Private institutions are also contributing.

97-8 ELECTRIC VEHICLE CHARGING STATION SIGNS (continued.)

Cecile Martin said there is an industry consensus in support of the proposed signs.

MOTION: By Dick Folkers, second by Bruce Carter, to recommend that Caltrans adopt the electric vehicle charging station signs. Motion carried 8-0.

ACTION: Item completed.

97-9 ELECTRIC MESSAGE SIGNS AND ARROW BOARD

Jack Kletzman told the Committee that Caltrans was asking for permission to experiment. The experiment is necessary to determine the relationship between size of the legend and the motorists ability to read and react to the sign. Randy Ronning asked for comments on a proposed work plan to evaluate new technology for portable changeable message signs (PCMS.) A PCMS was brought to the meeting for demonstration.

John Wallo established that some of the messages and graphics were warning signs for maintenance or traffic operations. Jack Kletzman explained that, at one time the Committee had discussed portable arrow signs, but had never discussed CMS, probably because the prevailing use of these signs was advisory. Caltrans is changing the way it uses CMS. These devices are becoming more like traffic control devices and for that reason Kletzman requested that Randy Ronning bring the device to the Committee.

The newer CMS will show arrows, warning messages, and symbol signs. They will show regulatory signs but in amber. John Wallo objected to regulatory sign not being black and white. Merry Banks noted that these are temporary signs. Wayne Tanda thought such a sign would be warning. Randy Ronning agreed, noting that any such CMS would have to be backed up by a black and white regulatory sign to be enforceable.

97-9 ELECTRIC MESSAGE SIGNS AND ARROW BOARD (continued.)

John Silva claimed that PCMS have been reviewed by the Committee, but they were in use before the Committee existed, and these signs instruct the motorist. He feels the proposed device deviates from Federal, other state's, and Caltrans Office of Equipment standard specifications. There are already PCMS specifications in existence, specifically used for emergency fog situations, where greater intensity is needed than one would expect from retro-reflective sheeting. Retro-reflective sheet signs and these devices require 700' distance for recognition. Specifications for major incident response devices require 500'. These devices have very limited use. There are standards that say that PCMS can be used as arrow signs but they must conform to arrow sign specifications which are, one mile visibility for high speed traffic, down to 1/2 mile visibility for road speed traffic. He feels these devices replace retro-reflective warning signs.

John Silva said that for major incidence responses on a freeway, the message must be conveyed much sooner and the conspicuity has to be much higher. Silva said there have been numerous studies on CMS requirements. He said that the proposed device violate virtually every principle listed.

Randy Ronning responded that Caltrans had purchased only 12 units. Six have LED technology and six use enhance split-flap technology. He intends to work with Cal Poly at San Luis Obispo, and investigate the eight variables identified in the work plan handout. He recognized they could not be used in every situation, but they would work in many.

Celso Izquierdo said the technology is already in existence which will save energy, reduce sign costs, and to reduce maintenance. Testing is needed to ensure that the signs operate effectively. Izquierdo requested Committee approval for the experiment.

MOTION: By Jack Kletzman, second by Dick Folker, to approve the Caltrans experiment. Motion carried 8-0.

ACTION: Item continued.

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PUBLIC COMMENTS

Harold Garfield requested that his letter concerning protected-permitted "Dallas Phasing" left turn signal displays and a letter from the FHWA be included in the minutes. These letters are on file with the CTCDC Secretary.

INFORMATION ITEMS

94-3 STOP SIGNS AT MID BLOCK

Gerry Meis apologized to the Committee for delaying approval of the proposed guidelines. He expressed reluctance to add more regulations unless necessary. Meis explained that at the State level, there is statutory law and administrative law. The statutory law is enacted by the Legislature and the administrative law is developed by the various State agencies. The Caltrans Traffic Manual is administrative law. Administrative law generally cannot be more restrictive than the statutory law allows. Meis feels the language of the guidelines for STOP signs at mid block is more restrictive than the statutory law allows. He asked the Committee if anyone knew the basis upon which the law was enacted. Wayne Tanda understood that a legislator decided to enact the law without any input from technical staff.

Gerry Meis established that the guidelines pertain to local agencies and not to Caltrans. He asked if the Committee wanted the restrictions listed in a draft document. Jack Kletzman explained that the Minutes show that the Committee did not want two items listed in the draft. They were a restriction of 175' from the intersection and the fact that Caltrans is exempt from the law. Kletzman said he reinserted those two items for internal Caltrans discussion because that was the last direction upon which Caltrans had agreed. The ensuing Caltrans internal discussion never took place.

INFORMATION ITEMS (continued.)

94-3 STOP SIGNS AT MID BLOCK (continued.)

Wayne Tanda explained that the local jurisdictions represented on the Committee felt that guidelines would be beneficial. Without the guidelines the local jurisdictions could be directed to put STOP signs at inappropriate locations. Guidelines would provide a sounder basis for the discreet use of this device. Tanda does not view the guidelines as restrictive. Rick Ryan explained that, even in guidelines, “shall” is mandatory and

Wayne Tanda said that the Committee made a recommendation and that if Caltrans thought a more appropriate wording should be used, do it.

LEDs

Wayne Tanda said the City of San Jose may order red signal modules in conjunction with Caltrans. Tanda noted that the ITE was still proceeding to develop specifications at the national level. There may be some results at the ITE meeting in Boston next month. He also said the FHWA is conducting a symposium on LED issues next year.

Item 92-4C LED STUDY, OTHER LOCAL AGENCIES

Wayne Tanda suggested that since Caltrans has a specification it may not be appropriate to continue these experiments. The consensus of the Committee was in agreement. Tanda suggested the Committee take some action without adversely affecting local agencies that have installed LED devices.

Dick Folkers suggested a letter, including the Caltrans specification, urging compliance. Others members of the Committee were concerned that testing agencies may wish to continue testing or needed time to convert. Wayne Tanda suggested getting the experimenting agencies to complete their experiments and point them toward the Caltrans specification.

INFORMATION ITEMS (continued.)

Item 92-4C LED STUDY, OTHER LOCAL AGENCIES (continued.)

Dick Folkers expressed concern about agencies using earlier generation LEDs which may be less than required by the newly adopted specification. He proposed to advise them that the experimental process is completed and to conform to the new specification. Ahmad Rastegarpour said that Caltrans Dist. 6 (Fresno) was granted a two year test period starting in 1992 and completed their report in 1994. They estimate there was 30% degradation after two years in the field. He said the Fresno test can be concluded and they will be included in the State's LED retrofit program. Rastegarpour was interested in knowing from other agencies, which continued to test, what type of technology was being tested and what environmental conditions exist. He said that Caltrans Dist. 4 (Oakland) which was going to conduct testing under different environmental conditions is now using the new specification.

Wayne Tanda surmised that LED STUDY, OTHER LOCAL AGENCIES should be concluded and local jurisdictions, doing LED testing, should follow Fresno's action and retro-fit as funds allow. Bruce Carter pointed out that, under experimental rules, once the experiment is concluded the device is either approved or removed. Tanda agreed but noted that, in a practical sense, many jurisdictions may not be able to immediately convert. Carter did not think the Committee had the authority to extend the time. He feels local agencies will have to make their own decisions, about when to change over, and how to defend their actions. John Wallo suggested a recommendation to the local agency to convert as soon as possible.

A letter advising local jurisdiction action should be brought before the Committee at the next meeting.

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STATUS OF EXPERIMENTS

Item 90-7 BICYCLE SIGNAL HEADS

Wayne Tanda said that the City of Davis anticipates appearing at the next meeting. They are working with the CHP and the CBAC to develop proposed legislation and guidelines.

Item 92-4A TRAFFIC SIGNAL DIMMING, CITY OF SAN JOSE

Wayne Tanda said that the City of San Jose anticipates appearing at one of the next two meetings with data collected over the past year at 350 intersections. The analysis will review visibility and energy savings.

Item 92-4B LED STUDY, CITY OF SAN JOSE

Wayne Tanda said that the City of San Jose has not yet gone to bid pending the approval of an appropriate specification for LEDs. If the Caltrans specification is used, the City will retro-fit from 350 to possibly the entire system and maybe able to complete the experiment with the conclusion that the City is using State approved specifications.

Item 92-4C LED STUDY, OTHER LOCAL AGENCIES

Jack Kletzman said that the City of Fontana is continuing their experiment.

Item 93-2 L. E. D. STUDY, CALTRANS

Ahmad Rastegarpour said that Caltrans Dist. 6 (Fresno) was granted a two year test period starting in 1992 and completed their report in 1994. They estimate there was 30% degradation after two years in the field. He said the Fresno test can be concluded and they will be included in the State's LED retrofit program. Ahmad Rastegarpour said that Caltrans Dist. 4 (Oakland) which was going to conduct testing under different environmental conditions is now using the new specification.
This item is now complete.

Item 93-10 SIGNING, LIME-YELLOW SPECTRUM

Bruce Carter thought the item had been closed. Jack Kletzman said the local agencies completed their experiments. The Committee wanted to keep the item open for the FHWA conclusion. Dick Folkers said the topic appeared as "proposed" in the Federal Register. Carter volunteered to look into the matter and report back to the Committee.

STATUS OF EXPERIMENTS (continued.)

Item 93-14 SPEED CONTROL SIGN, EXPERIMENTATION REQUEST

Wayne Tanda expressed concern about the progress of the experiment. He sent the form to Jerry Craybill, the requester, followed by phone calls in May and July, and received no response. Tanda is inclined to inform him that, unless a status is provided on the progress of the experiment, it will be terminated at the next meeting.

Item 94-10 PEDESTRIAN SIGNAL HEAD

Bruce Carter said he will get a report for the next meeting.

Item 95-9 LEFT TURN LANE PROTECTED/PERMISSIVE SIGN

Dick Folkers said they are continuing the experiment.

Item 96-3 ILLUMINATED LEFT TURN YIELD SIGN

Wayne Tanda said the signs have been designed, are being manufactured, and are expected to be installed in about six months. Data is not expected until the fourth quarter of 1998.

ADJOURNMENT

MOTION: By Jack Kletzman, second by Bruce Carter for adjournment.
Motion carried 8-0. The meeting was adjourned at 3:35 pm.

CALTRANS ACTIONS

Item 90-7 BICYCLE SIGNAL HEADS

Experiment in progress.

Item 92-4A TRAFFIC SIGNAL DIMMING, CITY OF SAN JOSE

Experiment in progress.

Item 92-4B LED STUDY, CITY OF SAN JOSE

Experiment in progress.

Item 92-4C LED STUDY, OTHER LOCAL AGENCIES

Experiments in progress.

Item 92-18 GOLF CART SYMBOL SIGN

Caltrans will make the sign specifications upon receiving the FHWA approved symbol sign from the City of Palm Desert.

Item 93-2 L. E. D. STUDY, CALTRANS

The experiment in Fresno (Dist. 6) is complete and the experiment in Oakland (Dist. 4) has been canceled because they will conform to the recently approved LED specifications.

Item 93-10 SIGNING, LIME-YELLOW SPECTRUM

Committee is awaiting results from the FHWA.

Item 93-18 CROSSWALKS, SEQUENTIAL LIGHTING

Caltrans is reviewing the recommendation of the Committee.

Item 93-14 SPEED CONTROL SIGN, EXPERIMENTATION REQUEST

Experiment in progress.

Item 94-3 STOP SIGNS AT MID BLOCK

Caltrans is in the process of formulating policy.

Item 94-10 PEDESTRIAN SIGNAL HEAD

Experiment in progress.

CALTRANS ACTIONS

Item 95-9 LEFT TURN LANE PROTECTED/PERMISSIVE SIGN

Experiment in progress.

Item 96-3 ILLUMINATED LEFT TURN YIELD SIGN

Experiment in progress.

Item 96-7 SPEED LIMIT SIGNING

Caltrans is reviewing the Committee's recommendation.

Item 97-1 CTCDC BY-LAWS

By-laws have been approved by the parent agencies.

Item 97-2 TODS SIGNING

The Committee had been given copies of the Legislation at the previous meeting. The sign specification sheet, sought by the Committee, was included in the first sheet of the TODS sign package approved at the last meeting. There were no objections to the specific symbol signs presented at this meeting. In view of these factors, and the need of the Office of Tourism for prompt action, Caltrans has approved these three symbol signs.

Item 97-7 PEDESTRIAN HAND LED SYMBOL

Caltrans has approved the specification.

Item 97-8 ELECTRIC VEHICLE CHARGING STATION SIGNS

Caltrans has approved the signs recommended by Committee and is in the process of recommending a symbol sign.

Item 97-9 ELECTRIC MESSAGE SIGNS AND ARROW BOARD

Caltrans is negotiation with Cal Poly for testing.